

Consideration of request for preliminary adoption of proposed amendments to 312 IAC 13 to allow for the use of industry standard grout materials, and provide for Division of Water approval of grout additives, for vertical closed loop geothermal wells; Administrative Cause Number 14-022W

Amendments are proposed to Rule 312 IAC 13 to assist with Indiana's implementation of IC 25-39 in response to the current use of high solids bentonite grout containing graphite, and other neat cement based geothermal grouts, for vertical closed loop geothermal systems in order to enhance thermal conductivity and pumpability of the grout material. Amendments to 312 IAC 13 by Temporary Rule (LSA #13-499(E)) to allow for graphite in geothermal grout material were previously adopted on October 30, 2013.

The use of graphite to thermally enhance geothermal grout material has proven to be effective and environmentally safe, and has been approved by several Midwestern states including Michigan, Kansas and Wisconsin. High solids geothermal grout enhanced with graphite has also been specified for use in Ball State University's current \$33.1 Million phase of its geothermal well installation project. Various other neat cement based geothermal grouts have also been found to be effective and environmentally safe, and have been approved for use in ten states. Rule 312 IAC 13-8-1 currently allows only for the addition of sand to enhance the thermal conductivity and pumpability of geothermal grout. The proposed amendments to 312 IAC 13 would allow for: 1) the addition of graphite to high solids bentonite grout; 2) the use of neat cement based grouts; and 3) the ability of the Division of Water to approve the use of other geothermal grout additives.

The Division of Water recommends the Natural Resources Commission give preliminary adoption to amendments to 312 IAC 13, as provided in "Exhibit A" to allow for the use of industry standard grout materials for geothermal wells, and to allow for Division of Water approval of grout additives.

EXHIBIT A

TITLE 312 NATURAL RESOURCES COMMISSION

Proposed Rule
LSA Document #14-

Digest

Amends 312 IAC 13-8-1...

SECTION 1. 312 IAC 13-8-1 IS AMENDED TO READ AS FOLLOWS:

312 IAC 13-8-1 Geothermal heat pump wells

Authority: IC 14-10-2-4; IC 25-39-4-2; IC 25-39-4-9

Affected: IC 25-39

Sec. 1. (a) This section establishes standards for drilling ground water heat pump systems that are in addition to the general requirements for drilling a well under 312 IAC 12.

(b) If a return well is used with an open loop system, its design ~~shall~~ **must** provide a water transmitting capacity that is at least one and one-half (1½) times the required water supply of the heat pump unit.

(c) With respect to a vertical closed loop system, boreholes ~~shall~~ **must** be pressure grouted from the bottom of the borehole to the ground surface with a **neat cement or** high solids bentonite grout that, ~~may contain sand~~ to enhance thermal conductivity, **may contain any of the following:**

(1) Sand.

(2) Graphite.

(3) Another material approved by the division. (*Natural Resources Commission; 312 IAC 13-8-1; filed Nov 22, 1999, 3:34 p.m.: 23 IR 770; readopted filed Aug 4, 2005, 6:00 p.m.: 28 IR 3661; filed Jul 14, 2006, 1:23 p.m.: 20060809-IR-312050341FRA; readopted filed May 20, 2011, 3:28 p.m.: 20110615-IR-312110002RFA*)